

Digital Computer Laboratory  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

**SUBJECT:** BIWEEKLY REPORT, NOVEMBER 27, 1955

**To:** Jay W. Forrester

**From:** Scientific and Engineering Computation Group

**1. MATHEMATICS, CODING AND APPLICATIONS**

**1.1 Introduction**

During the past two weeks 494 coded programs were run on the time allocated to the Scientific and Engineering (S&EC) Group. These programs represent part of the work that has been done on 48 of the problems that have been accepted by the S&EC Group.

**1.2 Programs and Computer Operation**

<u>Problem No.</u>	<u>Title</u>	<u>Minutes</u>
100	Comprehensive System of Service Routines	62.9
101 N.	Optical Properties of Thin Metal Films	4.6
106 C.	MIT Seismic Project	95.8
126 D.	Data Reduction	4.2
131	Special Problems (Staff Training, Demonstrations, etc.)	230.8
141	S&EC Subroutine Study	4.2
155 N.	Synoptic Climatology	52.1
162 N.	Nuclear Scattering Phase-Shifts	25.8
172 B,N.	Overlap Integrals	59.3
177 C.	Low Aspect Ratio Flutter	11.3
179 C.	Transient Temperature of a Box-Type Beam	2.6
193 L.	E.V. Problem for Propagation of E.M. Waves	60.2
194 B,N.	Augmented Plane Wave Method (Sodium)	184.5
216 C.	Ultrasonic Delay Lines	79.3
225 B,N.	Neutron-Deuteron Scattering	34.1
226 D.	Circulation of the Atmosphere	16.8
231 B,N.	Reactor Runaway Prevention	38.0

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234 N.	Atomic Integrals	21.6
235 B,N.	Eigenvalues for a Spheroidal Square Well	304.5
239 C.	Guidance and Control	389.5
244 C.	Data Reduction for X-1 Fire Control	38.0
245 N.	Theory of Neutron Reactions	43.8
246 B,N.	Scattering from Oxygen	67.4
253 N.	APW as Applied to Face- and Body-Centered Iron	219.2
257 C.	Horizontal Stabilizer Analysis	43.4
260 N.	Energy Levels of Diatomic Hydrides	46.5
261 C.	Fourier Synthesis for Crystal Structures	62.6
262 N.	Evaluation of Two-center Molecular Integrals	30.1
270 B.	Critical Mass Calculations	80.9
272 L.	General Raydist Solution	61.3
278 N.	Energy Levels of Diatomic Hydrides LiH	52.1
285 N.	APW as Applied to Chromium Crystal	107.5
288 N.	Atomic Wave Functions	53.9
293 C.	Rolling Bearings	25.5
309 B,N.	Pure and Impure Potassium Chloride Crystal	35.3
312 L.	Error Analysis	119.3
314 C.	Factoring High Order Polynomials	2.5
315 C.	Torpedo Hit Distribution	15.1
317 C.	Stability Derivatives from Flight Test Data	15.5
318 C.	3D Aerodynamic Lead Pursuit Study	3.4
319 B,N.	Scattering from a Spheroidal Potential	149.6
323 N.	Analysis of Cloud Chamber Photographs	24.0
325 B.	Diffusion Equation	13.3
327 L.	Prediction Analysis	17.9
328 B.	Buried Elastic Wave Source	30.4
329 A.	First Approximation Solution on Ore Body	25.2
330 C.	Determination of Natural Mode Shapes and Frequencies	2.9
331 D.	Matrix Iteration	10.9

### 1.3 Computer Time Statistics

The following indicates the distribution of WWI time allocated to the S&EC Group.

Programs	47 hours, 28.8 minutes
Magnetic Drum Test	17.4 minutes
Magnetic Tape Test	1 hour , 08.1 minutes
Scope Calibration	09.7 minutes
PETR Test	48.0 minutes
Test Storage Check	07.2 minutes
Demonstrations (No. 131)	<u>3 hours, 50.8 minutes</u>
Total Time Logged	53 hours, 50.0 minutes
Div. 6 Conversions, Inter-run Operations, etc.	16 hours, 23.8 minutes
Total Time Assigned	72 hours, 13.8 minutes
Usable Time, Percentage	97.23%
Number of Programs	494

\*\*\*\*\*N O T I C E \*\*\*\*\*

Quarterly Progress Reports will be due in on DECEMBER 20.

A NEW Quarterly Report Form will be sent out shortly to every programmer - please return them as soon as possible to Mrs. Thorndike, Barta 111. IF YOU ARE A MORSE FELLOW - and you HAVE reported on your problem to the Morse Committee for their quarterly, you NEED NOT submit a quarterly to the Digital Computer Laboratory. If this is the case, please return your quarterly progress form with a note at the top to this effect.

Thank you,

Margaret Thorndike

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